

FEBRUARY, 1958

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FEBRUARY — — — 1958

Vol. 26

No. 2

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96 Collins St., Melbourne, C.I.  
Telephone: MF 4505.

**PRINTERS:**

"RICHMOND CHRONICLE,"  
Shakespeare St., Richmond, E.I.  
Telephone: JB 2419.

MSS. and Magazine Correspondence  
should be forwarded to the Editor,  
"Amateur Radio," C.O.R. House, 191  
Queen Street, Melbourne, C.I., on or  
before the 8th of each month.

Subscription rate in Australia is  
18/- per annum, in advance (post  
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# AMATEUR RADIO

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

Published by the Wireless Institute of Australia,  
C.O.R. House, 191 Queen Street,  
Melbourne, C.I.

## EDITORIAL



## MR. MEMBER

History has shown that as mankind develops the necessity arises for organisation. Even early cavemen found that in order to have the requirements for existence and defence from natural enemies, some person or persons had to be entrusted with the task of directing the majority. In this way "civilisation" as we now call this organisation was evolved.

The same manifestation of planning can be found in various sections of life as it presents itself today: Boards have Directors; Trusts have Committees, and so on. Our own Institute has its Divisional Councils charged with multitudinous duties of planning.

But for whom and what is this planning? If the fundamentals are examined, it will be noted that the organisation was for the benefit of the general participant. Thus the duty of the Director, Chairman or what-have-you and his committee is to work for the average individual; in other words, Mr. Member.

However, where does Mr. Member fit in; is he but a silent figure on whom benefits both good and bad are showered?

In the basic set-up, it was the individual who, in co-operation with his fellows, appointed a leader and then accepted his direction. Hence, the individual is the person who has

the right to voice his opinion as to what action should be taken with respect to his welfare.

Mr. Member of the W.I.A., therefore, by speaking at a meeting indicates to his Council his personal thoughts on some matter. If Mr. Member and his fellows discuss some matter freely Council can be guided by a majority decision. Plainly then it is the duty of Mr. Member to state his ideas; to give others the benefit of his opinions, so that through enlightened discussion something can be acted upon.

A postmortem with its trenchant criticism doesn't bring anything to life.

And after voicing his notions and accepting a majority decision, where is Mr. Member now? Because he, together with his fellows, is the Institute, it is his duty to undertake the tasks given him by his leader. Even more than this, it is his privilege to offer to undertake positions and projects which he can give his especial attention.

An Institute consisting of Mr. Member and his fellows banded together, stating their ideas, doing a share of the work and enthusiastically aiming at better things for all is a very worthwhile Institute indeed.

Mr. Member—I salute you.

FEDERAL EXECUTIVE.

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# Mathematical Considerations of S.S.B.

BY JOHN ALBERT ADCOCK,\* VK3ACA

IN "Amateur Radio," July, 1957, appeared an article on s.s.b. which pointed out that it lacked many of the advantages previously claimed for it. I think that the explanation given in that article was only half the story and a more detailed explanation would create a better understanding of the system. I feel that many Amateurs are not honest about the results they get from s.s.b. reception and think something like this: "It sounds awful, but just because I cannot tune it in properly I cannot blame his transmission. I will tell him it sounds OK." I hope the following explanation will help to clear up the apparent disagreements between different explanations of the system.

First of all let us look at some mathematical relationships. For simplicity, we will assume we are dealing with simple sine waves. A modulated wave can be looked upon from two points of view. Where you are concerned with bandwidth, it can be looked upon as a number of single sine waves, or where you are concerned with amplitude it can be looked upon as an envelope or a product of a carrier wave and a modulating wave. The instantaneous amplitude of the envelope will equal the sum of the instantaneous amplitudes of the individual sine waves in the former case.

Let us call the amplitude of our carrier  $A$  and the frequency  $f_0$ , then the instantaneous amplitude of the carrier will be:

$$A \sin 2\pi f_0 t \dots \dots \dots (1)$$

where  $t$  is time in seconds.

Similarly, let the amplitude of the modulating wave be  $B$  and its frequency  $f_1$ , then the instantaneous amplitude of this wave will be:

$$B \sin 2\pi f_1 t \dots \dots \dots (2)$$

The expression for the resultant wave when (1) is amplitude modulated by (2) will be:

$$\sin w_1 t (A + B \sin w_1 t) \dots (3)$$

$w_1$  and  $w_1$  have been substituted for  $2\pi f_1$  and  $2\pi f_1$  for simplicity.

This product can be changed into an identical sum and we get the expression:

$$A \sin w_1 t + \frac{B}{2} \cos (w_1 - w_1) t - \frac{B}{2} \cos (w_1 + w_1) t \dots (4)$$

It will be noted that the two side bands of expression (4) are of half the amplitude of the original modulating wave expression (3); one with frequency  $f_1 + f_0$  and the other with frequency  $f_1 - f_0$ .

Now if we remove one side band and double the amplitude of the other side band, we get the expression:

$$A \sin w_1 t + B \sin (w_1 + w_1) t \dots (5)$$

(the change in phase of the remaining sideband will not make any difference after the removal of the other side

band). The expression for the instantaneous amplitude of the resultant wave will be:

$$\sqrt{A^2 + B^2 + 2AB \cos w_1 t} \sin \left[ \frac{(2w_1 + w_1)}{2} t + X \right] \dots (6)$$

where  $X$  is a variable depending upon the values of  $A$ ,  $B$ ,  $w_1$  and  $w_1$ .

From expression (6) it is seen that the expression for the instantaneous amplitude of the envelope is:

$$\sqrt{A^2 + B^2 + 2AB \cos w_1 t} \dots (7)$$

If  $A$  is large as compared with  $B$ , then the expression is approximately:

$$A + B \cos w_1 t \dots \dots \dots (8)$$

It can be seen that the frequency of this wave is equal to the difference between the frequencies of the two original sine waves of expression (5) and equal to our original modulating wave frequency. Also, it will be noted that the frequency and amplitude of this approximate envelope is identical to that of the envelope of our original amplitude modulated wave of expression (3).

For the remainder of this discussion, expressions (3) and (4) represent amplitude modulated waves where the modulating frequency is  $f_1$  and expression (5) will represent a single side band of frequency  $(f_1 + f_0)$  and an injected carrier of frequency  $f_0$ . The beat frequency in the second case will be  $f_1$  represented by expressions (7) and (8). The power of any of these waves in any part of a circuit will be proportional to the square of its amplitude. Since the two side bands (or frequencies) of expression (4) are half the amplitude of the one of expression (5), than each of these waves of expression (4) contain one quarter the power of the single sideband of expression (5). The total sideband power of our considered wave in expression (4) is half that of expression (5).

It will be seen that the audio power extracted from the a.m. signal is the same as that from the s.s.b. For a fully modulated wave (i.e.  $A = B$ ) the sideband power of our s.s.b. will be equal to the carrier power of the a.m. signal. If the s.s.b. requires double the power of the a.m. signal's sidebands to produce the same audio power in a receiver, what becomes of the other half of the power contained in the single sideband? The answer lies in the square root sign of expression (7). It can be shown that the envelope of expression (7) contains twice the power of the envelope of expression (8). By Fourier's theorem, expression (7) can be resolved into a fundamental and harmonics.

Instantaneous amplitude of envelope =  
 $a + b \cos w_1 t - c \cos 2w_1 t + d \cos 3w_1 t - \dots \dots \dots (9)$

where the values of  $a$ ,  $b$ ,  $c$ ,  $d$ , etc., depend upon the ratio of  $B$  to  $A$ . From this expression it is seen that the extra power in expression (7) is used up in

producing these extra harmonics and the d.c. component  $a$ . As has been pointed out from expression (8), these harmonics are negligible when  $A$  is large as compared with  $B$ .

What about signal-to-noise ratio? The noise power at a particular point in the audio circuit of a receiver will be proportional to the bandwidth of the i.f. channel. Therefore when using a receiver of a given bandwidth and when comparing an s.s.b. signal with an a.m. signal of carrier power equal to the peak power of the s.s.b. signal, there will be no advantage in signal-to-noise ratio of s.s.b. compared with a.m. In fact unless the amplitude of the injected carrier in the s.s.b. receiver is much larger than the peak amplitude of the sideband, distortion will result. If a receiver is used which has a bandwidth to take best advantage of the system being received, then the s.s.b. receiver will cut the noise power by half and thus the s.s.b. will have a 3 db. signal-to-noise ratio advantage over a.m.

There are two ways that I know of to improve this situation.

(1) By using a square law detector in which the resulting audio amplitude from expression (7) would be proportional to  $B \cos w_1 t$ . A square law detector condition can be approximated to by using a very low signal input to a diode detector. I have not gone into the mathematics involved in this case. Incidentally the effect of a square law detector can be approximated to by using a diode detector with a small signal input.

(2) By using a "product detector" or "converter". This type of detector is used in what is sometimes called a "synchronous receiver". In this type of detection, the injected carrier is actually modulated by the received sideband. The expressions for the instantaneous amplitude of the modulation envelope of this new wave will be:

$$\sin w_1 t [A + \sqrt{2} B \sin (w_1 + w_1) t] \dots (x)$$

$$= A \sin w_1 t + \sqrt{2} \frac{B}{2} \cos w_1 t - \frac{\sqrt{2} B}{2} \cos (2w_1 + w_1) t \dots (xi)$$

$\frac{\sqrt{2} B}{2} \cos w_1 t$  is the only sideband that will be audible and it will be noted to have the same frequency as the original audio we started with in expression (2).

To study the signal-to-noise ratio in this particular case, it must be realised that comparison of signal and noise powers in a particular receiver is purely relative. It should also be noted that the power in a sine wave will be proportional to the square of its amplitude.

Let the noise power be  $N$  and the signal power of the original single sideband or the power of the original a.m. carrier be  $P$ . The actual signal power in the expression  $[A + B \cos w_1 t]$

\* Staff Mew, P.O. Box 3, Yallourn, Vic.

from expression (iii) and (viii) will contain only  $P+2$ , because this expression represents the peak values or envelope of the modulated wave. The  $\sqrt{2}$  value in expressions (x) and (xi) was put in to make the sideband signal power equal to  $P$ . The signal power will be divided equally between the two sidebands.

In the case of expression (iii) the signal-to-noise ratio will be:

$$\frac{1}{4} \frac{P}{N} = \frac{P}{2N}$$

In the case of expression (viii) the signal-to-noise ratio will be:

$$\frac{1}{4} \frac{P}{N} = \frac{P}{N}$$

In the case of expression (xi) the original noise power will be divided equally between the two sidebands and the signal-to-noise ratio will be:

$$\frac{1}{4} \frac{P}{N} = \frac{2P}{N}$$

Thus it will be seen that there is a 6 db. signal-to-noise ratio improvement using this new system compared with equivalent a.m.

#### SUMMING UP

1. There is no improvement in signal-to-noise ratio in receiving s.s.b. as compared with a.m. with an equivalent power on an ordinary receiver.

2. If the receiver bandwidth is such as to take best advantage of the system being received, then s.s.b. has a 3 db. signal-to-noise ratio advantage over equivalent a.m.

3. Unless the injected carrier is much stronger than the sideband being received, distortion will result. (20% second harmonic when the sideband amplitude and injected carrier amplitude are equal.)

4. A receiver with a rectifier type detector is actually unsuitable for s.s.b. reception.

5. To extract all the intelligence from the sideband it is necessary to use a product detector.

6. 6 db. is the maximum signal-to-noise ratio advantage of s.s.b. over equivalent a.m. using this system.

7. Some further advantage of s.s.b. can be realised if the average power of the s.s.b. signal is considered, but our licence only allows a peak input of 100 watts.

#### CONCLUSION

If you have any qualms about accepting this seemingly impractical mathematical method of arriving at these conclusions, ask yourself honestly have you ever heard an s.s.b. signal that really sounded like a.m. I realise that there are many advantages of s.s.b. and I may be a little biased against it. S.s.b. will probably increase in popularity eventually, so that it will be necessary to re-build all our high frequency gear. In any case, c.w. still has the edge on all these systems! Incidentally, articles describing product type detectors appeared in "CO" for June '57 and "QST" for Sept. '57.

If any person is interested in how expressions (iii), (iv), (v) and (viii) were developed, I would be pleased to supply him with the reasoning.

#### COMMUNICATIONS KEPT OPEN BY GRIFFITH HAMS

On 22nd December, 1957, Griffith Amateurs were approached by Councillor Murrell, from Hillston, who advised that communications had been lost between Hillston, Mt. Hope and Matakania due to extensive bush fires in the area. He asked that the Amateurs go to Hillston with portable radio equipment to assist the bush fire fighters with communications.

Four stations were set up, one being at Hillston and three were stationed by Cr. Murrell with bush fire fighters.

Stations which operated were VK2ZPL, VK2AXD, VK2AEB, and VK2HJ; they were assisted by VK2FS and VK2ZDM. The equipment used was an AT21 and R1155 at Hillston base station, and out-stations were ATR2B, ATR4B and No. 11 set.

7050 Kc. was used throughout as the No. 11 set does not tune 80 metres, however it was considered that 80 metres would have been the better band to operate on that particular night.

Communications were carried out between out-stations and from out-stations to base from 1700 hours on the 22nd to 1200 hours on 23rd December. At this stage it was considered that no further assistance could be given by the Amateurs and they returned to Griffith.

The above report was made available by VK2ZPL and the N.S.W. Divisional Council of the W.I.A. would be pleased to receive reports from any other members called upon to assist in a like manner.

New!

## A & R

## T.V. Voltage Adjuster

### An Essential Instrument for the T.V. Serviceman

With the increasing number of Television Receivers now being installed, the demands made upon the serviceman's time will increase steadily. It is again a common complaint often made that the voltage is too high, and it is certain that some ready means of detecting this condition would assist the serviceman, and perhaps save valuable time in endeavouring to locate a suspected fault within the receiver. With the above in mind, A & R have available the T.V. Voltage Adjuster as illustrated. Soundly constructed and finished in attractive Silver Grey, this instrument, which also provides the serviceman with an invaluable, yet inexpensive addition to his test equipment.

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# ZEPHYR MICROPHONES

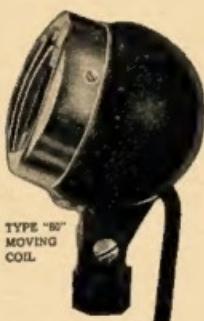


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# Test Meters and How to Use Them\*

## SOME BASIC PRINCIPLES OF TROUBLE SHOOTING

BY LEWIS G. MCCOY, WIICP

SOONER or later in Amateur Radio the Ham is going to have to learn how to trouble shoot. By trouble shooting we mean finding what is wrong with a piece of equipment and fixing it. Whether one builds a kit or a homebrew piece of equipment—or even has a store-bought rig—the day is likely to come when something goes wrong and the units need fixing. In this article we propose to show you a simple method of pinpointing trouble sources.

### EQUIPMENT NEEDED

An important piece of test equipment needed by the Ham who wants to do his own servicing is a volt-ohm-milliammeter (v.o.m.). This is a single instrument that is capable of measuring resistances, direct current, and a.c. or d.c. voltages. Such a meter is a sound investment for the Ham because he will find it has many uses in the shack. However, before running out to the store and buying the first unit you see, write some or all of the distributors of Ham equipment and obtain their latest catalogues and sales flyers. Then you'll be in a position to get the best buy for your money.

When you start looking through the catalogues you'll find that the test meters are rated by "ohms-per-volt". The number of ohms-per-volt determines the sensitivity of the instrument. For example, when the 250-volt scale of a 1,000 ohms-per-volt meter is used, the meter has a total resistance of 1,000 times 250 or 250,000 ohms. By Ohm's Law, the current required for full-scale deflection would be 1 mA, which means the instrument uses a 0-1 mA. meter. Another common type of test meter is the 20,000 ohms-per-volt unit which uses a 50 microampere meter. Also, you'll see advertisements for vacuum-tube voltmeters (v.t.v.m.) both as kits and completed units. Their advantage lies in their very high resistance (10 megohms or more).

### ADVANTAGES AND DISADVANTAGES

Each of the three instruments listed above has certain limitations. The accuracy of any voltage reading will depend on the calibration accuracy of the meter and to what extent the meter "loads" the circuit being tested. A 1,000 ohms-per-volt unit uses less resistance in series with the meter than the other two types, and consequently more current will be drawn from a circuit being checked. However, once you understand this point, you can use the 1,000 ohms-per-volt meter for most transmitter work. The only place in a transmitter where this type of meter may be at a disadvantage is in checking the grid bias across a high-resistance grid leak. If the meter resistance is less than 8 or 10 times the grid-leak resistance, it is better to use the meter as a milliammeter and connect it between the grid resistor and ground.

\* Reprinted from "QST," July, 1957.

• A Test Meter is a mighty useful gadget to have around the shack when a piece of gear, for no obvious reason, isn't working properly. In this article WIICP discusses the advantages and disadvantages of some of the various Test Meters and then goes on to show how they are used.

If receiver or high-resistance circuit trouble shooting is contemplated, then purchase either a 20,000 ohms-per-volt v.o.m. or a v.t.v.m.

The v.t.v.m. will measure a.c. and d.c. voltages and also resistance. Most commercial units have an input resistance of 11 megohms and consequently any loading of a circuit being tested is held to a minimum. The v.t.v.m. does not measure current but it is a simple matter to determine the current flow by checking the voltage drop across a known resistor and then using Ohm's Law.

Osc

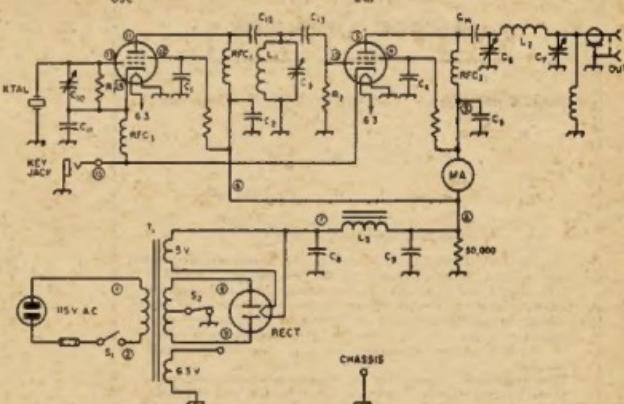


Fig. 1 — Circuit diagram of two-tube typical transmitter with power supply.

The v.t.v.m. requires a 115 volt a.c. power source as it does not use batteries for its power supply. Unless the v.t.v.m. is well shielded and the line cord is filtered, it is susceptible to r.f. pick-up when working around an operating transmitter.

### USING THE TEST METER

There are a couple of important points to remember when using your test meter. Never, never, use ohmmeter scales to check live circuits. If there are voltages present in a piece of equipment being checked, don't use the ohmmeter scales.

Always use the highest voltage or current scale when checking an un-

known quantity. Otherwise you may have a burned out piece of test equipment or a badly bent meter pointer.

The test meters are usually furnished with insulated leads that have metal probes at the tips. The tips are OK for some tests, but you'll find many instances when it is more convenient to clip the leads to the circuit being tested. There are insulated clips available that will slip over the ends of the probes and at least one should be purchased for your test meter.

### SAFETY FIRST

In doing trouble shooting the most important thing to remember is that you are working with dangerous voltages and currents. You cannot permit yourself to be careless at any time you are testing a live circuit. Turning the power off is not always a sure method of removing voltages from a piece of gear. If the bleeder resistor should happen to open up, the capacitors in the power supply may retain their charges for long periods of time. To be safe, take a metal screwdriver that has

AMP

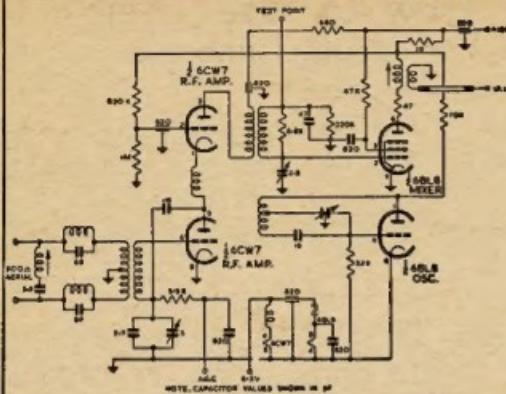
CHASSIS

a well-insulated handle and short the hot power supply lead to the chassis. This will discharge the capacitors.

Many Amateurs are inclined to be careless around low voltages, believing that only high voltages are dangerous. Whenever you do any trouble shooting always remember that you are working with live circuits—get careless and the circuits may be live but you won't

### WHERE TO START

Fig. 1 is a circuit diagram typical of a rig used by many Amateurs. It consists of a crystal oscillator and an amplifier. We'll use this circuit to illustrate the various check points in trouble shooting.



**6CW7**  
TWIN TRIODE  
CASCODE AMPLIFIER

**HEATER RATINGS**

V<sub>h</sub> 6.3V  
I<sub>h</sub> 330mA

**CHARACTERISTICS (each section)**

V<sub>a</sub> 90V  
I<sub>a</sub> 12mA  
V<sub>g</sub> -1.5V  
gm 6.0mA/V  
u 24  
R<sub>in</sub> 2.0K ohms

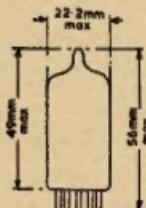
\* measured at  $f = 200$  Mc/s with cathode connections pins 7 and 8 strapped.

The Mullard 6CW7/ECC84 is a double triode specially designed for use as a cascode amplifier in the R.F. stage of television receivers. The first triode is connected as a neutralised grounded cathode amplifier and drives the second triode which is connected in a grounded grid configuration. This arrangement results in a low noise level for the input stage being achieved in the first section, combined with high gain in the second section.

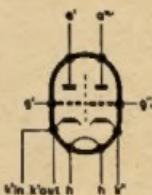
The capacitance between the two triodes is kept to a minimum by an internal shield connected to the grounded grid electrode thus reducing feed back and contributing to stability under AGC conditions. The high gm of 6.0mA/V is obtained with an anode voltage of 90V thus allowing the two triodes to be series connected across a 180V H.T. supply.

# Mullard

## TELEVISION VALVE SERIES



6CW7



B9A Base



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When something goes wrong in a piece of equipment that has been operating there are a few things the operator should check before doing any voltage testing. Such obvious things as key leads, a.c. power source and plug, fuse, antenna system, etc., should all be checked out. If the tubes are glass, look and see if the heaters are lighting. If the tubes are metal, see if the envelopes are warm to the touch. Should one be hot and the other cold, try another tube in place of the cold one. In other words, try to analyse the problem before actually digging into the equipment.

When a piece of gear fails there are three sign posts that will narrow our trouble shooting area. First, the tubes don't light or aren't warm. Second, there is no plate current present. And last, no grid current shows. In Fig. 1 we don't show meter switching but most transmitters meter both the grid and plate by switching.

We'll start our trouble shooting by taking each of the three visible signs and going through them separately. Table 1 shows the expected meter readings, check points, and trouble spots for the heater circuits, excluding the obvious checking of the a.c. line power, switch S1 and fuse to the power transformer T1. The v.o.m. scale used for each check will depend on the voltage being checked. However, always remember to use the highest scale when checking an unknown voltage point.

You will notice reference to bad wiring and this can mean faulty soldering, poor connections, etc. When checking at a terminal point that has several branches, the test probe should be touched to each of the component leads, not just the terminal point. Also, a common wiring error beginners make

is to solder insulated wire ends to terminals—particularly enameled covered wire. Always remove the insulation and clean the ends of the wires before soldering.

In Table 1, the first column gives the check points where the v.o.m. leads are connected. The second column shows the expected meter reading. The last column lists expected trouble spots.

#### NO PLATE CURRENT

In our checking in Table 1 we had a clear-cut road to follow. However, in finding why there is no plate current our road has several branches which must be checked out. In Table 2 each check point will show us what has happened up to that particular point. Before doing any checking with the test meter there are a few things to look for that may be the cause of trouble. First, be sure that the key leads haven't been disconnected. If the key isn't closing the circuit then the cathodes of the oscillator and amplifier are not being connected to chassis ground and the tubes won't draw current. If there is grid current but not plate current, then it can be assumed that the power supply is working. However, due to a faulty component or wiring, the power supply output may not be reaching the amplifier. Should you have output from the rig and show no plate current, then it is apparent that the meter isn't functioning or the movement is sticking.

With the heater checks we were only concerned with a.c. so voltage polarity was no problem. In Table 2 we will be working with d.c. and the chassis ground is our reference point; the voltages are either positive or negative with respect to chassis. On the test meter, the lead jacks are marked plus

and minus or are red and black. The black is minus or negative, and this lead is connected to chassis ground for all of the checks in Table 2. Our positive lead is the one used for all the checks.

If there is plate voltage present and the tube does not draw current, there are three things to look for. An open cathode circuit will prevent current from flowing. If there is no voltage at the screen grid, very little or no current will flow. And last, if the grid is biased beyond cut off (and there is no grid drive), the tube won't conduct.

In Table 2 we start off at the plate of the tube and work back to the power supply. The first column gives the check point, which is the circled number in Fig. 1. The next two columns indicate the presence of voltage. There are no definite values for voltages given because they would probably be meaningless if applied to your rig. Your instruction manual will give the important voltage and current values and these can be applied in your testing. The last column gives the cause of the trouble.

#### NO GRID CURRENT

Before making voltage measurements for grid current there are some simple checks that can be tried which may show the trouble spot. Listen to your receiver at the crystal frequency for the oscillator signal. If there is no signal then try another crystal, and don't forget to tune the receiver to the new crystal frequency. Should there be a signal heard from the oscillator, then tune C3 to see if the amplitude of the signal changes. If it does—and gets louder at one point of the tuning—it indicates the oscillator and tuned circuit are operating properly. The trouble

TABLE 1

Heaters Don't Light or Tubes are Cold to the Touch.		
Check Points	Normal Reading	If No Reading, Possible Cause
With S1 closed, between 1 and 2.	115 volts a.c.	Faulty power switch. Blown fuse. Faulty wiring in line cord or plug. Blown fuse in house wiring.
Across 6.3 volt heater winding on power transformer.	6.3 volts a.c.	Open heater winding.*
Between the heater pins at tube sockets.	6.3 volts a.c.	Poor ground connection for 6.3 volt winding. Bad connections at tube sockets or terminal soldering points on heater line. Poor ground connections at socket. Open heater.
Heater pins on tubes. Remove tubes from sockets for this check.	Low resistance†.	

\* An open heater winding doesn't mean a new power transformer is required. A filament transformer can be installed in the transmitter and the power transformer can be retained.

† Always use the low resistance scales of the test meter for continuity checks, unless it is desired to check the resistance in a circuit or continuity through high-resistance circuits.

TABLE 2

R.F. Tubes Lit but No Plate Current Indicated			
Measure + Voltage between Chassis and Check Point:	Voltage	Cause	
3	X	See note at bottom of chart.	
3 6	X	This indicates power supply voltage is OK but there is an open circuit between points 6 and 3.	
3 5	X	Meter OK, but RFC2 is open.	
5 6	X	Meter open.	
4 5	X	Open screen dropping resistor, or C4 shorted.	
7	X	Open filament in rectifier tube, wiring error or faulty transformer winding.	
8 or 9; close S2. (Use 1,000v. a.c. scale.)	X	Bad rectifier tube. Bad connections at rectifier socket.	
	X	Faulty switch at S2. Open winding in high voltage secondary of T1.	

If there is voltage at the plate and screen of the amplifier and the circuit being tested uses grid-leak bias (Fig. 1), then the probable reason for no plate current indication would be an open cathode circuit or a defective plate milliammeter.

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is then likely to be in the meter failing to read and show grid current. On any of the tests mentioned above, don't hold the key down any longer than necessary, as the amplifier tube will draw excessive plate current when no excitation is reaching it.

In Table 3 all voltage measurements are made in the same manner as in Table 2, with the exception of the check at point 10. This is the grid of the amplifier and the voltage will be negative with respect to chassis. The meter leads should be reversed for this test, positive lead to chassis ground and the negative lead for testing. Also, a 2.5 mh. r.f. choke must be connected in series with the test lead when checking at point 10. Otherwise, the test meter will detune the grid circuit and no reading or an incorrect one will result. If your transmitter has an r.f. choke between grid and grid leak (R2), then you won't need to use another r.f. choke; the test probe can be touched to the junction of the r.f. choke and the grid leak for the voltage check. If your test meter is the 1,000 ohms-per-volt type, then use the highest voltage scale for this test. The highest scale puts the most resistance in the voltmeter circuit, and the shunting effect on the grid leak is minimized. If a v.t.v.m. is used for testing, then it usually isn't necessary to use an r.f. choke with the probe.

#### ADDITIONAL TESTS

If grid and plate current are obtained and the transmitter doesn't work, then the trouble should be in the amplifier tank circuit. Continuity checks should be made to determine if there are any wiring mistakes or bad connections. In the case of a pi network as in Fig. 1, the output capacitor C7 should be set at maximum capacity and C6 tuned for resonance as indicated by the dip in plate current. If the tank circuit resonates, then you can be reasonably sure that the transmitter is working and your problem is one of loading or shorted C7.

If the transmitter is a kit or home-brew job, the most common trouble encountered is short circuits. This can be due to bits of solder or wire getting into spots they shouldn't be in, and it sometimes takes considerable searching to find them. It is a good idea to make a few resistance checks before applying power to a newly built piece of gear. The power supply B+ line is usually above chassis ground by the value of the bleeder resistor. A quick check is to switch your test meter to the high resistance scale and connect one lead to the B+ line and the other to chassis ground. The ohmmeter will quickly show the presence of any shorts.

Once you have the pieces of equipment working it is an excellent idea to make a record of voltage readings at different test points. Suitable points would be:

- (1) Output of power supply.
- (2) Plate voltage of amplifier and oscillator stages.
- (3) Screen voltage of amplifier and oscillator stages.
- (4) Grid voltage.

These checks should be made with the transmitter operating into a load. The next time the rig acts up you'll have a record to refer to which will probably make your job easier.

It would be impossible to completely cover the subject of trouble shooting in the space permitted here. Such things as self-oscillation, parasitics, etc., are treated in "The Radio Amateur's Handbook."

TABLE 3  
No Grid Current Indicated

Step 1.—Check for voltage at point 11. If there is none, then check at point 6 to see if the power supply output is present. If the supply is not functioning, refer to Table 2 for trouble shooting. Voltage at point 6 and none at 11 indicates bad wiring or open RFC1.

Step 2.—Voltage at point 6 and none at point 12 indicates bad wiring, open screen dropping resistor or shorted C1. Check resistor with ohmmeter. Check C1 by removing oscillator tube and measuring resistance between point 12 and ground.

Step 3.—Turn off power and switch test meter to read ohms (high resistance).

Connect one test lead to oscillator grid, point 13, and the other lead to the cathode, point 14. Meter should show approximately the same resistance reading as value of R1. If not, it indicates bad wiring, grid to cathode short in oscillator tube, or resistance of R1 has changed.

Step 4.—Leave one test lead at point 14 and move other lead to point 15. Meter should show continuity. If not, it indicates bad wiring or open RFC3.

Step 5.—Move lead at point 15 to the grounded terminal of key jack and leave attached at point 14. Open and close key. The meter should read when key is closed, indicating continuity from oscillator cathode to chassis ground. If not, check wiring to key.

Step 6.—Turn on power, switch meter to read d.c. high voltage, connect positive meter lead to the chassis and make voltage check at point 10, amplifier, with key closed. Failure to obtain reading when C3 is resonated (see text) indicates bad wiring, grid-to-cathode short or faulty components at C12, L1C3, C13, or R2. Depending on the type of test meter used, an r.f. choke may be needed in series with the test probe. (See text.)

#### USING MODERN VALVES IN THE TYPE 3 RECEIVER

Editor "A.R."

Dear Sir,

I desire to disassociate myself from the article which appeared under the above heading and my name in the November issue, although it does bear some resemblance to a manuscript submitted by me.

Yours faithfully,  
Norman Boase.

#### PREDICTIONS FOR FEBRUARY, 1958

Mr. E. AUSTRALIA — W. EUROPE S.E.	Mr. E. AUSTRALIA — W. EUROPE S.E.
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E. AUSTRALIA — MEDITERRANEAN

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# REMEMBRANCE DAY CONTEST, 1958

## MODIFICATION TO RULES

Following the directive given to it at the Federal Convention, the Federal Contest Committee has gathered suggestions from members in the Divisions and from Contest Committees where they exist.

The suggestions which appear below are the results of careful calculations and the discussions on what was really being aimed at in the Contest. These aims seemed to be threefold—

- (a) To provide a lively exchange of contacts;
- (b) To give an incentive for every Amateur in Australia to come into the Contest.
- (c) To have an equitable scoring table and an incentive for each Amateur to contribute towards the winning of the State trophy.

The rules as they stood, gauging from the results and a survey of the stations listed in the logs, fulfilled (a) and (b) but left much to be desired in (c). Only the top six entrants in each Division contributed their score towards the gaining of the trophy. All those others who made more than the qualifying number of contacts gave away points to the top six in the other Divisions.

In response to suggestions by the F.C.C. the VK6 Division has put forward this scheme:—

State score to be calculated by the formula:

$$\text{Average of the top six Logs} + \left( \frac{\text{Logs Entered}}{\text{State Licences}} \times \text{Total of Points from all Entries} \right)$$

It can be seen that all entrants whose scores are not in the top six now contribute to the State effort; thus the larger States like VK3 who, with 70 logs, scored 14,280 points (the best in Australia) will benefit from this scheme.

However, the F.C.C. was still not satisfied that the ratio  $\frac{\text{Logs entered}}{\text{State Licences}}$  was the best one to use and after working on the table (based on the scores for 1957) and looking at the comments made by the various Divisions during and since the Convention, this formula is suggested:

$$\text{Average of the top six Logs} + \left( \sqrt{\frac{\text{Logs Entered}}{\text{State Licences}}} \times \text{Total of Points from all Entries} \right)$$

This tends to off-set the very low ratio that the larger States find difficult to overcome and provides a further incentive to those States to get busy and win the trophy; this, VK6 had in mind when their suggestion was made.

The Committee wishes the Divisions—and that means each member through his Council—to adopt either of these formulae for 1958 and 1959 and to forward their votes to the F.C.C., Box 1234K, G.P.O., Adelaide, before the 31st March.

Study the table carefully and note the variations, particularly to the VK2, VK3, VK5, and VK6 scores, brought about by the application of the formulae to the 1957 scores and the possible improved log entry for VK3 and the improved scoring for VK6 which could take place in 1958.

The scoring table is considered suitable.

A further amendment is to Rule 2, to which will be added: "Portable/Mobile operation means that the sta-

tion is not connected to any private or public power plants or mains."

Ratification is required for this change.

Can VK3 push their entry up to 200 logs? And what about VK6 to 15,000 points? That's the question—otherwise note how the scores close up the gap between each State on this year's results when that square root ratio is used.

State	Total Points	Logs entered State Licences	Bonus	Average top six Logs	Points Scored
VK2	12,046	$59 \div 1,156$ $\sqrt{59 \div 1,156} = 0.23$	615	690	1,305
VK3	14,280	$70 \div 1,093$ $\sqrt{70 \div 1,093} = 0.253$	915	790	1,705
For 1958?	$\sqrt{148 \div 1,093} = 0.357$	3,512	790	4,302	
VK5	13,549	$86 \div 416$ $\sqrt{86 \div 416} = 0.454$	5,098	737	3,297
VK6	7,347	$85 \div 219$ $\sqrt{85 \div 219} = 0.623$	2,851	701	3,552
1958?	15,000		4,577	701	5,278
			8,345	701	9,046

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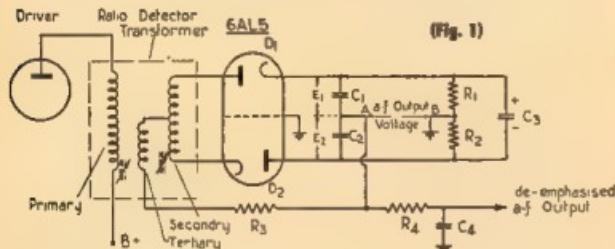
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The voltages applied to the two diode circuits (referring to Fig. 1) are each the vector sum of the tertiary winding voltage and the appropriate half secondary voltage. The normal phase relationships existing in coupled circuits result in a phase difference of 90° between the latter two voltages when the incoming signal is at the centre frequency, i.e., in the condition of zero modulation. This phase difference varies as the instantaneous frequency is affected by the degree of modulation and causes a variation in amplitude of the voltage applied to the diode circuits. One increases and the other decreases as the instantaneous frequency increases and vice versa. Thus the frequency deviation of the incoming signal is converted to an amplitude variation of the voltages applied to the diode circuits.

C<sub>3</sub> is a large capacitor which becomes charged in the presence of a carrier and plays a major part in the suppression of amplitude modulation of the input signal. The discharging time constant of C<sub>3</sub> through R<sub>1</sub> and R<sub>2</sub>, the diode load resistance, is long compared to the period of the lowest audio frequency to be detected (usually about 0.2 seconds). The voltage across C<sub>3</sub> is hence maintained constant over short intervals of time.

Consider the operation of the circuit at a time when the frequency of the incoming signal differs from the centre frequency by a deviation,  $\Delta f$ , such that the voltage applied to D<sub>1</sub> is greater than that applied to the diode D<sub>2</sub>. The current flowing in C<sub>1</sub> must be greater than that flowing in C<sub>2</sub>. Hence the voltage developed across C<sub>1</sub> (E<sub>1</sub>) is greater than that developed across C<sub>2</sub> (E<sub>2</sub>). The sum E<sub>1</sub> + E<sub>2</sub> is held constant by C<sub>3</sub> and hence point A must be negative relative to point B (earth). So it can be seen that the instantaneous voltage at point A will vary in proportion to the difference between E<sub>1</sub> and E<sub>2</sub>, and hence to the instantaneous value of  $\Delta f$ , and at a rate equal to the rate of change of  $\Delta f$ . Thus the audio output voltage follows the audio modulation of the sound carrier.

R<sub>3</sub> is a small resistance which limits the peak diode currents, thus tending to reduce the effects of unbalance in the two halves of the circuit. R<sub>4</sub> and C<sub>4</sub> form the de-emphasis network which is necessary to correct for the pre-emphasis used at the transmitter to gain an improved signal to noise ratio.

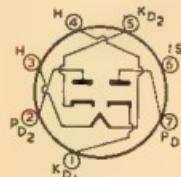
A twin diode ideally suited for use in such a circuit is the Radiotron 6ALS. The performance of a circuit using the 6ALS is described in Radiotronics, June, 1957. The 6ALS is also suitable for use as a video detector, a.g.c. clamp and in other applications.

For further information on the 6ALS and other Radiotron Television Valves, consult the TV1 Booklet. Additional copies of this advertisement are available free and post free on request.



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bottom view

- Pin 1 — Cathode of Diode No. 1.
- Pin 2 — Plate of Diode No. 2.
- Pin 3 — Heater.
- Pin 4 — Heater.
- Pin 5 — Cathode of Diode No. 2.
- Pin 6 — Internal Shield.
- Pin 7 — Plate of Diode No. 1.



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## CORRESPONDENCE

The opinions expressed in these letters are the individual opinions of the writer, and do not necessarily coincide with those of the publishers.

### S.S.B. ACTIVITY

Editor "A.R.", Dear Sir,

Many have the impression that lack of activity on s.s.b. does not justify the effort required to convert to that mode of operation.

As at 0815 hrs. G.M.T., 2nd January, 1958, I have worked the following 100 countries on two-way s.s.b.:—

AP2BP	HH	LA	WP7
BVIUS	HP	LU	VP9
CZ2HV	HR	MP4KAM	VQ4
CN8MM	HS1A	OA	VR2
CO5LF	HZ1AB	OD5BZ	VS1
CP8EK	ILOV	OH2QJ	VS2
CRSAH	JA	OHONC	VS4JT
CX5AF	KAO0SC	ON4	VSSAT
DLS	KB6	OG5GU	VS6
DU7SV	KC4s	OZ	VU2
EASAR	KG1BO	PJ2MC	XE2JK
Els	KG4AQ	PY	XV6A
Fa	KG8	SM	YIAIA
FP8	KH6	SV0	YUIAD
PF8	KL7	SV0 Dodec.	YV5FL
F3TR	KM6	TF2	ZBICZ
Gs	KP4	TG8AD	ZG4DA
GD3GMH	KR6	TI2HP	ZD4
GI	KS6	UA1DZ	ZE6
GM	KT1DD	VE	ZL
GW	KV4	VK	ZS6
HB9	KW6	VP2 Leew.	ZS3
HC2AGI	KX6	VP2 Wind.	SA2AH
HE	KZ3	VF5	SA2TP

C. B. Edmonds (VK3AEE)

### OBIQUE STROKE F.O.C.

Editor "A.R.", Dear Sir,

It's about time some reputable organisation such as our own W.I.A. took up either with the L.A.R.U. or at least our own Postmaster-General's Department this growing habit of some self-styled select group who insist on signing "oblique stroke F.O.C." after their call signs

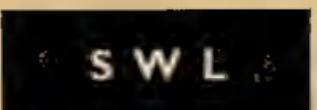
To me it is quite illegal and why something has not been done already beats me. For 20 years now I have been licensed VK3BG and that is the call I have always signed—nothing more and nothing less.

The F.O.C. I am told, stands for some privately-sponsored "First Operators Club" and to be a member one must be "invited" by a certain number of members. Much the same, perhaps, as any decent club, except that in many cases in Australia I know of potential members who go around the bands canvassing for sponsors and this is where F.O.C. becomes a little hay-wire.

The addition of these three letters—F.O.C.—is perhaps the worst example of snob-value I have seen in our hobby. For anyone to lower himself to be a member of such a clique, I think, shows discredit to the true Australian democratic spirit—to me one of this country's most cherished possessions.

It has become so bad that some of the adherents to this most annoying "I am better than you class" have the cheek to sign "oblique stroke F.O.C." even to their C.Q.s.

I appeal to Federal Executive to take this matter up and stop it immediately. It is most un-Australian, undemocratic



Ian J. Hunt, WIA-L3007  
211 St. George Road,  
Northcote, N.S.W., Vic.

I imagine that as conditions have been fairly good of late everyone is hard at the job of listening to some elusive new country or two in a period of two months. I have received only two letters. Now, come on all you a.w.l.'s, you'll need to do better than that or there will definitely be no a.w.l. section in this magazine. To have notes we must have news, news, I mean news. If you are interested in chipping up news for me, I have to depend on your letters. So how about doing the right thing and drop me a line telling of your activi-

ties. First off in my mail box I find a letter from Don Grantley of Helensburgh, N.S.W. Don, in between looking after his XYL, harmonic, cows, garden and auto, manages to squeeze in a little listening. He states that he is lucky in having a wife who is a real amateur (my blessing) and that just a wire trailed out of the window for an antenna seems to work out OK. Don has recently logged his 1000 country—a 100!

The acquisition of a new receiver and erection of several beam antennae should assist him in increasing this total. Don has been doing most of his listening on the v.c. portions of the bands. Another of his activities is taking part in bush fires and fighting bush fires. An ex-R.A.A.F. man, Don makes the following suggestion: "In view of the increased interest being shown in the ex-R.A.A.F. wireless units, would you consider printing the pictures and renewing your acquaintance with radio?" I myself think that would be a good idea and would also apply to other ex-service wireless ops. Any of you who may be interested could draw up a short article on the subject and I'll supply whatever information you require.

Dennis Holmes, of Warrnambool, is my only other correspondent this month. Until recently he has been confined to s.w.l. with a short wave receiver operating on the 40, 20 and 20 metre Ham bands. However now with an ARS he has keenly listened UU all hours. Recently Dennis has heard HS1B and

and time wasting. I appeal to other members of the W.I.A. who have any Australian democratic spirit to dodge these "oblique stroke F.O.C." calls like the plague. So far as I am concerned they're no different from "scab labour"—nobody wants to work with them.

—Roth Jones (VK3BG).

W.R.T.D.A. on 15 m.w. and plenty of V.K.s and W.s on 15 and 20. He finds listening to the s.s.b. stations real good fun. His antenna at present is a dipole.

To catch up with the doings of the various groups here are details of recent events.

**November Group Meeting.** At this meeting we were pleased to welcome Ian McNabb of Highett, T. E. Gardner of South Yarra, and Mr. L. D. Sykes who is a member of about 30 years standing of the Institute. At this meeting it was decided that the December meeting would be a social evening. Much time was spent in discussing such interesting things as cream cakes, sandwiches, pies, etc. and everything else that the bungy bunch a.w.l. It was also decided to begin several contests for members, the details of which will be published when they have been finally worked out.

**December Group Meeting.**—Probably due to it being holiday time not many members were present. However, a good time was had by all. The hours flew quickly by while members informally discussed every wireless aspect of a.w.l. News, news, news, old tales in particular, the soft drinks which were locked in the tx room, but a phone call brought Alan Sael to our rescue. We thank you very much Alan for leaving the 8 m.w. DX to assist us in our hour of need. After the drinks became available the feast began. The meal was a full gale, but everyone hopped in with a will and disposed of the major portion of it in quick time. We would like to extend our thanks to the Divisional Council who supplied us with the cold dishes and Biscuits. WIA-L3005 who although not able to be present, supplied a really large box of sandwiches.

**Personal Fare.**—Recently in Melbourne was Frank Robertson, WIA-L3005 of Port Albert. While here he was unfortunately unable to get seeing as much as possible in the time spent here, including some time he has since arrived back home safely with his load of new gear to try out. Bert Stebbings has by all accounts been busy here in the last few weeks due to the Christmas-New Year rush, but by now should be enjoying a holiday somewhere up in Vicks.

Michael Ide is understood to have obtained a nice long pole, so antennae should be mounted smartly in his QTH. Nothing much has been heard of the two Group reporters—Frank Nolan and Geoff Morris—or late so we assume they are away bringing in all the latest DX. You may have noticed our continued very weak beam and hopes soon to have it erected on top of a 40 ft. mast. Higher gain tubes in the f.e. section of the rx has lifted the country heard rate to 187 and the going is becoming more and more encouraging.

One interesting station heard was XVA in Saigon, S.E. Vietnam. This latter station is operated by a member of an American advisory mission to the Vietnamese Government and the country's Radio Corp. Radio Corp. in its prospective operation have given us in recent issues of "CQ" and now he has appeared. He stated that he was running only 50 watts to a ground plane antenna and was transmitting on 15 m.w. and 20 m.w. waves. Several V.F.W. stations managed to work him including ZPM and ZACN. He is sure to be in great demand. FB8AH was heard on 15 m.w. phones.

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**Frank T. Hine, VK2QL**  
30 Abbotsford Road  
Homebush N.S.W.

Band conditions have been erratic and no two days have been the same as far as Sydney area has been concerned and this seems to be the opinion of DX stations. 14 Mc. has been notable for the rarer DX stations that have been heard calling CQ after CQ with no takers. I call to mind hearing JT1A, EA8CE, F8BXX and listening to VQ5GJ and VQ3JTW QSO each other because they could not raise DX. My own activity has been on 14 Mc. seeing what QRP—15 watts—and a Windom can do, which was quite fair, so you "young squirts" have no fears about starting off on something small for your DX hunting.

If space permits, I think some details of U.S. Amateur activity, which 2AGH passed on to me, may be of general interest. The number of U.S. Amateur licensed in 1950 was 80,000, at present about 180,000, and the estimated figure for 1965 is 200,000. 49% buy their transmitters, 7% are using inputs under 35 watts, 9% 35-75w., 40% 75-100w., 36% 150-500w., and 13% over 500w. Interesting figures aren't they. 78% use am. phone, 52% c.w. 9% s.s.b., 8% n.b.m., 3% teletype and 1% t.v. 7 Mc. is most popular with 87%, 28 Mc 54%, 14 Mc. 48%, 50 Mc. 33%, and 144 Mc. 33%. No figures are given for 21 Mc. Engineers are the greatest number of licensees at 21%, then Students at 19%.

## NEWS AND NOTES

Cards are now being returned from the S.A.R.L. marked "non-member" and information to hand shows the Belgian Bureau has adopted the same policy. My own personal opinion is that if this practice becomes a general policy, QSLs will become a thing of the past as Amateurs will not waste time sending a card if there is a possibility of it being returned to him. The certificate hunters will have to send all QSLs direct with I.R.C.s. to get their cards. Work out how much that is going to cost!

If you worked ZD2AO and still need his card, try again to G2AO.

Cards for FP8AA should go to K2CPR.

ZL1ABO is reported to be active from the Kermades on 3844 Kc. (3CX). Yemen should be represented by the

time you read these notes with a phone station using 1kw.—call sign unknown.

For his recent activity, ZM6AV was using the rig of an American YL who happened to be passing through on her way to Fiji.

**VQ84J** is active from Chagos Is.

SK2AN stated he was in Kuwait. I have seen no comment that there has been a change of prefix from MP4K.

## ACTIVITIES



One last thought before closing, the erratic conditions on 14 Mc. have forced many of the R.T.T.Y. commercialists to go to telegraphy and consequently give their calls signs and without exception they have all been using "B" as the first letter, which is U.S.S.R. allocation. What pressure are they going to bear at the forthcoming conference? Are we going to have a representative to try to hold our existing allocations?

## QTBs OF INTEREST

- CNBPF-Via W4UWF [AIR]  
 CNBPF-Ber 28, Navy 214 F P O., N.Y. (AIR).  
 VQSM-Air Force, Mauritius (AIR).  
 VPVPC-Via WGM, ex-KVABE C/o. C.A.A.  
     For Meyer, Florida (AIR).  
 OHXDL-E.D. R.  
 HEILAC-Schann 423  
 HEILAC-TRM 725, Kuwait  
 PRAXX-VIA PEBB  
 FLRAC-EP121, Djibouti (4DO).  
 OQSKW Kolwezi, near Elizabethville (4DO).  
 VQVAQ-P.O. Box 3388 (4DO).  
 ZCSNP-Marine Dept., Sandakan (SRK.).  
 KGAEA-Via WGM, Navy 115, F P O., New York  
     (BERS195).  
 KGHHL-APO 121, C/o P.M. New York  
     (BERS195).



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# VHF

Frank P. O'Dwyer, VK3OP  
180 Thomas Street,  
Hampton, Vic.

## 50 MEGACYCLES

Let overseas news overshadow the local for the time being. In a contact with Arch VK3JB (Jan 8, on 28 Mc), VE1OD said that he was monitoring 50 Mc continuously and that at the time of speaking the band was wide open to Europe and Africa. This further said that two W6 Hams had made W.A.C. having worked North and South America, Asia, Africa and Oceania. Congratulations to those two unknown W6s for a mighty fine effort in getting through to W.A.C. from their area. Arch was told that Alaskan stations were "pouring in" on 144 Mc., to W3 land, a hop or 2,000 to 3,000 miles.

A check of the distances involved for the U.S. contests and our own chances for W.A.C. provide an interesting comparison. Based on Great Circle bearing from the centre of the U.S.A., and in approximate figures, we have Europe and the bulge of West Africa on 4,000 miles, Japan on 7,000, to 7,500, to 8,000 miles, Asia rising over Alaska, and Honolulu 2,000. Compared with our own distances, set alone in the ocean as we are, they are just over the road. Great Circle based on Melbourne 4,000 miles to the tip of South Africa, 8,000 to the coast of China, Japan and India 10,000 Europe, 12,000 the east coast of Africa, 8,000 the west coast of North America as well as South America. Not mountable, the lucky break should come one day.

One interesting point about the North American opening is that it is mid winter and the VE1 and the W3 both reported that it was snowing at the time of contact. So disregard any idea you may have that 50 Mc. is a summer band only.

### STOP PRESS

Max Miller, of the S.W.L. Group, reports hearing VK5EF informing VK4WII that on the previous day (11th January) he had heard KH6UJ on 50 Mc. and later a couple of very weak unidentified W signals.

### GENERAL VK NOTES

December produced a fair crop of Interstate openings and all States appeared to work one another with the possible exception of VK3/S. no news to hand whether that had been accomplished. The last contacts listed under State headings. Just where have the ZL signals got into? There were several openings from there to VK3, one finding the local gang almost on the outer, the ZL/VK3 path being more western. VK3 but the ZL/VK3 path was only just fair, signals each way being down.

VK4AZ, Mt. Morgan, apologizes to the stations he has called him and whom he has failed to answer. Some time ago he had a dangerous QRM, having a 50kV line virtually passing his door, with a main sub-station with about 20 transformers handling the works from 50kV down another 30 yards away. Shades of GPO! He has since had to move his position so far Lance, despite his difficulties, has managed to work JAI and S. VK3, 2, 4, 8, and heard VK6. A splendid effort considering the noise.

The Ross Hull Contest swung into its stride again with numerous contacts being made. For the number of contacts made to the end of December, 4BT appears to hold the advantage with about 140, close up Bob 4NO with just over 100, and then VALE in the 80's.

ZL must be well in the running, operating with 50 and 144 Mc.

Conditions on 50 Mc. though the openings are reasonably frequent, are not to be compared with former years. Openings have not lasted as long nor as good, and for the first time since Interstate signals first came through the Christmas-New Year week failed to produce any unusual exceptions. Normally that period gives either one or two days of all States and ZL break-throughs which lasted from 2 or 3 hours to most of the day. The E layer when present this year does not appear to be as strong as in previous winters. Apparently quite a fair portion of the signals are being either absorbed or allowed to pass through. Does this indicate that the sunspot maxima produces an unbalanced effect between the northern and southern hemisphere, with a concentration of effective E layer to the north?

Previous band use made it appear that mid-summer with the sun overhead gave the peak in such periods, but the mid-point at mid-winter trans-equatorial scatter band evident during the equinox when the sun is over the equator. But the great let-down occurred this year in our southern latitudes, the normal north-south 1,000 Mc. band path being poor. Comments from individual Ham or interested parties on this would be most welcome and perhaps we could find out the solution of "where we have our good openings gone to."

### THURSDAY

Newcomers over the holiday period include Sotex-IBD, 3ZDU, 3ZER, 3ZEW, 3ZDG, 3ZAV ("Genghis") 3ZP, 3ZBZ, 3ZAU ("Ouyen"). David 3ZAT operating portable from Maffra has been working VK4, 5 and ZL. Who was the v.h.f. operator located north of the Yarra who got so readily worked up one night and never got some sleep? Well, I visited him and found him to work VK4 during one of the early bashing overs. MACnificent effort that. Moral. Do not indulge in prolonged ragchewing without tuning between overs as there is a possibility of getting into trouble.

Interstate stations may be interested to know that there is a group of frustrated VK3s on the high end of the first megacycle. They include 3ZAQ 50.7, 3ZDU 50.8, 3ZAV 50.81, 3ZI 51 Mc. and 3ZBZ 50.6. Apparently do not give up this fast lane. 3ZLZ snapped up the VK3 gang when they came through late at night, his multi-element yagi certainly works out. 3OF is well into stride again of an evening now that his t.v.l. is completely cured.—3ZAQ.

### SOUTH AUSTRALIA

V.H.F. boys generally, please send all information regarding any contacts on 50, 54, or 58-60 Mc. and distances in excess of 500 miles, direct to Gordon 3ZU. This is being collated to ascertain the type of propagation and is being done in collaboration with Mr. Stenonic Ionospheric Prediction Service. This is a most useful part of our work and has a long-range benefit in pre-determining use of bands over long distances.

If you can make 54 Mc. contact after 80 Mc. let me have the meter.

Reg 5QH reported recently working a VK4 then immediately afterwards 3SO. Reg is using n.b.m. on 50 then as that faded (from 5 x 8) changed to 56 and made a 5 x 7 on that band with 50 de watts. So there is something for the experts to work on.

On 50 my n.m. converter is working at last so now by ix on 2 and "it" on 8 will duplex it with anyone who will talk to me. Made it first with S. VK3, then Reg 5QH followed on. Our 3RD and S. VK3 made the latter two contacts identified the station 18 times. You work out how long they lasted.

A few further frequencies by the way: Les 3AK 51.0, 3ZAU 51.0, 3ZEW 51.0, 3ZBZ 51.0, 3ZAV 51.0. The most recent assignment for the month is Bill 3ZAK and his mighty structure supporting, and the nest on top. It is a sight that should grace the cover of "QST" no less (or even "A.R.". A four-ailed steel tower, mounted on a tall base with 3ZAZ mounted on top, surrounded by a 4 over 4 on 6 plus a 18 ft. on 3 sandwiched between a vertical 3 on the right on top of the same. Just think what this is like. All built in silver with all elements, copper tubing etched, plated, completely motorized and remote controlled and direction indicated. A real Ham's dream, and just to prove it, you would hear a signal from it. What a surprise Bill is to see some pictures and want some and do an article for "A.R." It's outstanding and should not be missed.

KH6UJ has been on 50.3 into a ground plane and has been working VK4 and VK3. Who will be the first to beat him? Maybe by the time this is read it will have been done, for contacts on the lower frequencies with KH6 indicates others are on the lookout for VK4 contacts. Let us hope to see some soon.

About the heavier signals heard here to date are from 3ZAA Tunstall with several VK4 stations running a close second, this is apart from the VK3 Adelaide types who just run in and out with no contacts made.

Hugh EBC works Penola on 3 with ease these days and also has entered into the experiments being conducted by Bill 3ZAK, George 3CB, and Ken 3KC on the use of 6 for the LF band. These have been working on the idea that 8 should be a push over in areas where 50 and 40 is not a good frequency to use. They are meeting with fair success to date and hope to have something to offer soon.

Coi 3ZBZ with his shack in Christmas, Heavy congrats Coi, hope all goes well. One thing now is that the floor walking can perhaps be brightened by a remote DX contact.

About the most outstanding article for some time on v.h.f. band usage is to be seen in

"QST" December, page 87, by our old friend, Edward Tilton, WHDQ, and for those of you who get off the hook, accept that magazine if it will be sent to you. It and "QST" are excellent, for it applies to Australia just as much as to U.S.A., and demonstrates what will happen to us at the next International Conference unless we do something about protecting our

protection means firstly using them, not just now and then, but all the time, and of course not just some of them, but all of them. Who amongst us for instance can quote exactly how many above 28 Mc. are used? What is more, who has used them? Why we have only scratched the first mfg. of any of them at any time. So think seriously about it fellows, we want to retain our license to use them, and to keep them, and in particular suggest any suggestion for having a representative at that conference even if it does call for a special levy. It's too important not to act now and certainly no good complaining later on, on what we might have done!—3ZP.

### WESTERN AUSTRALIA

A new station appeared on the band on Dec. 8, GZBZ. He is duly welcomed by Jack 3ZBU and Don 3ZAV who were his contacts. Wally SWG has had about 14 Interstate contacts to date. The first opening to Fett occurred on Dec. 26 at about 1830 hours W.A. time. The first was with 3ZBZ and was worked over SRO, SBC, SBC, 3ZAN, 3ZAF. The first through was on Dec. 27 at 0645 W.A. time with 3ZAW, SQR, SMC and SMT. Following this, SRO and 3ZAV worked QRR on 5 Mc. Wally's first night was also worked 3ZD on Dec. 29 at 1100 W.A. time. SQR was heard and worked but was the only signal on the band. Stations on 50 Mc. here are SBO, SBE, SCB, SZA, 3ZEU, 3ZAA handicapped by antenna trouble at his flat. 3ZAZ at Wagga Wagga, 3ZBZ at Albany. Wally has the bugger on now in Perth. He heard from Dave SWT that 3ZBU is telegenic and puts modulation bars on channel 1 in the commercial rx that Dave is operating. SQR has also been seen by Dave, does this help our cause for 50 Mc.?—3ZAV.

### TASMANIA

VLAD started off well in the Ross Hull Contest with 33 Mc. QSOs on Dec. 2, 3, 4, 5 with openings also on Dec. 8, 10, 12, and 14, but since then only stray weak signals heard.—7TP.

## 144 MEGACYCLES

There have been some very good openings at the south-east corner of the continent and more are to be expected. February usually provides some thrills for the gang.

### NEW SOUTH WALES

The next meeting of the V.H.F. and T.V. Group will be held at Gore Hill Technical College on Fri. Feb. at 9 p.m. The lecture for the evening will be given by JARL and will be entitled "The design and construction of mobile equipment". The monthly night fox hunt was held on Monday, 14th Dec. This time the hunt was a mobile one, the fox being laid down and started from the same place. Starting place for the hounds was at Flemington Rail Yards and those present were 20A, 3ANF, 3ZAV, 3ZBB, 3ZCW, 3ATO/AZO and 3ZAU. The fox was captured twice during the night and was eventually lured across the railway line to Castlecove where he finally went to ground at 8 p.m. First to catch Jim was Phil 3ZBB and second was Dave 3AZW. Dave was the first in at Castlecove, so the honour of the evening was given equally by these two stations with 3 points each.

This being the last mobile event for 1957 and also it being the festive season, all those present then proceeded in convoy to the nearby QTH of 3ZR where refreshments were served in the shape of traditional juice and tea served in the hunting field.

The Christmas Scramble was held following the usual v.h.f. broadcast on Sunday, 22nd Dec. This annual event was well supported and although called a scramble, plenty of time was available for those participating to exchange seasonal greetings as well as score points for contacts. Dick 3ZCF was first with 16 points, second 3ZBG and 3ZAW with 12 pts. 3ZB and 3EN with 10 pts. each.

3ZB ran a Workie during the month of Dec conditions on 5 Mc. between Sydney and Newcastle have been good. Stan 3ZDL and Stuart 3ZDF both Newcastle have been worked by Sydney stations and 3ZBZ reports have not been received from 3ZAU. 3ZAU will be moved to Tamworth and will be missed by many Sydney stations that were able to work him on 144 Mc. at Wollongong. Bill 3AH has been out mobile quite a bit. Roy 3JR was heard working 2ANF after being absent from 144 Mc. for a considerable time. Neville 3DR is having



# NOTES

## FEDERAL

### RESIGNATION FROM FEDERAL EXECUTIVE

It is with regret that Federal Executive non-fax members that Bill Falconer, 2AWF, has resigned from his position of Business Manager.

During the time B.F. has been with Executive he has had considerable success, a positive factor in the solution of many problems. His training as an actuary has served good purpose in making many a detailed analysis of the financial situation.

However, he finds that other commitments will not allow him to continue to give to Executive the time he feels it deserves.

It is certain that all members will be grateful to him for his efforts and will wish the day when this permits him to return to some official position.

### LIST OF PERSONS WHO QUALIFIED FOR AMATEUR OPERATORS' CERTIFICATES

New South Wales

R. R. Butler, Black Forest, Bingara.  
F. J. Caton, 23 Jeffery Ave., North Parramatta.

J. E. B. Cleary, 191 Bruce St., Merewether, NSW.

A. Cork, 18 Bank St., Moolang.  
J. S. Cumming & Sons St. Castlereagh

G. F. Dent, 20 N.S.W. Crescent, Forest, Campbelltown.

H. de Gwart, 1/2 Cawral Rd., Brookvale.  
K. Hall, 2/2 Melody St., Coogee

W. G. Kirchner, 38 Waiwaihi St., Kaitaia.  
J. W. Lambert, Koote St., Barcilon

A. J. C. McNaughton, 18 Whilton St., Griffith, Victoria.

F. A. Auld, 14 Saugard St., Toorak.  
W. J. Bell, Saywood Park, Wangoom.

R. A. H. Blake, Telangau East via Heesham.  
E. H. Brown, 35 Greenvale St., West Deniliquin.

D. McE. Eales, 27 Belle Vue St., Lilydale.  
E. G. Egan, 4 Edith St., Caulfield.

J. Goss, 1 Eumerals Rd., South Caulfield.  
V. E. H. Goss, 100 Alexandra Rd., Morris

M. H. Hart, 75 Burwood Rd., Burwood

D. Myres, 75 Marley Rd., S. Elsternwick.

B. Nanton, 45 McNaum St., West Preston.

Parker, Post Office, Tawonga South.  
W. H. Parker, 120 St. Kilda Rd., St. Kilda.

J. P. Pritchard, 29 Summit Rd., Burwood.

J. Russell, 8 Narracan Ave., Yallourn.

G. W. Small, Box 92, Rainbow.

R. W. Wilkenson, 25 Lloyd St., Belmont, Geelong.

Queensland

N. Biggall, 18 Scarborough St., Scarness.  
E. Brown, 21 Fern Grove, Moonooka.

J. M. Burton, 30 Kelvin St., Clermont Hill.

E. C. Clegg, 150 Glenmore Ave., Ashgrove.

W. H. Houghton, Station Rd., Oxley.

A. R. Kruger, 265 Tingle Rd., Wynnum.

T. E. Meredith, 20 Thorn St., Ipswich.

### CONTEST CALENDAR

Compiled by W.L.A. Fed. Contest Com.



### ROSS HULL MEMORIAL

Note 50-54—55-59 Mc bands now considered separate bands for overseas contests. Contests involving scores of Return of Logs Postmarked not later than Saturday, 1st March, 1958.

### NATIONAL FIELD DAY

Return of Logs Postmarked not later than Saturday, 10th February, 1958.

### REMEMBER-DY CONTEST

Dates Saturday, 16th February—Sunday 17th February, 1958. Duration: 1500 hours E.A.S.T.—1750 E.A.S.T.

Rules See amendments this issue.

Voting return date: 31st March, 1958.

### A.R.R.L. DX COMPETITION

Dates. February 7 to 9; March 7 to 9. C.W.—February 21 to 23; March 21 to 23.

\*D. Muller, R.A.A.F. Hdq., Sturt St., Townsville.

\*W. S. O'Donnell, 24 Yates St., Railway Estate, Townsville.

E. J. Parow, P.O. Box 290, Dalby

\*V. Tarhanoff, 35 Kelsey St., Camp Hill, South Australia.

A. Appleby, 7 Wolseley Ave., Woodlands Park.

M. A. Bone, 1 Dean Grove, Marysville.

M. J. Brunker, 38 Rowland Rd., Hilton.

M. R. Bowden, 35 Angus Ave., North Walker-

ville.

R. L. Dyer, 61 Third Ave., Section Park.

\*G. Gabbo, Post Office, Naarm.

H. W. Hancock, 13 1/2 G Road, Clemmig.

C. G. Luke, 100 St. Kilda Rd., St. Kilmarnock.

\*P. A. Rose, 22 Fisher St., Franklin Estate.

Western Australia

R. G. Cook, Magnetic Observatory, Walleroo.

\*W. F. Duns, Box 15, Hyden.

D. J. Lyle, 84 Mackle St., Victoria Park.

\*L. G. Marshall, 100 St. Kilda Rd., Melbourne.

M. H. Saw, 26 Ashborough St., Double Bay.

\*C. O. Woods, 190 Margaret St., Ashfield.

Tasmania

\*M. G. Foster, 22 Married Quarters, Brighton.

M. F. Macmillan, Cable Station, King Island.

Territory of New Guinea

R. H. Murphy, C.M., Dept. Posts and Tele-

graphs, Port Moresby.

\*Qualified for the Limited Certificate.

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### FEDERAL QSL BUREAU

The Danish Society (E.D.R.) advise that the new QSL Bureau address is Box 335, Aalborg, Denmark. Q24H, who has been QSL Manager for over 20 years, has now retired and the duties will be taken over by the Bureau, Q22NU.

The rules for the Third European (W.A.R.) DX Contest for 1958 have just come to hand. As a result it was not possible to publish same prior to the commencement of the Contest. Contest period: 6th January—1958 G.M.T. 3rd Jan., to 24th G.M.T. 5th Jan., 1958 1800 G.M.T.—1800 G.M.T. 4th Apr., to 24th G.M.T. 6th Apr. Some of the rules have been altered slightly and the entries will be forwarded to the Bureau to get full copy of the rules from their Divisional Bureau or from the Federal QSL Manager.

The E.I. QSL Bureau has a new address which is 29 Botterton Avenue, Rockwood, London, E.16. This address is the S.W.L. or Listener's card will NOT be handled.

An outline in QSL cards comes from a small island—GD4MV, who works mainly on 7 Mc. c.w. around 18000. Other call signs held by GD4MV are GS4FV from back in 1923, and GD4MV post-war.

Writing the eve of his departure for Malaysia, Doug Twiss gives some interesting details of the Hams in this year's party, and of some of the objectives of the 1958 expedition. The full list of Hams in the 1958 team is as follows:

#### Macquarie Island—

George Hendrickson, Radio Supervisor, VK6KTT (ex-VK3KTT)

Harry Knox, Radio Officer, VK6KHK

Tom Caldwell, Radio Officer, VK6OTC.

Mawson—

Doug Twiss, Radio Supervisor, VK6KUJ (ex-VK3KUJ) Macquarie, ex-VK3KUJ, ex-VK1KUJ.

Alex Brown, Radio Officer, VK6KDA (ex-VK1KDA Macquarie)

Bob Johnson, Radio Officer, VK6KRO

Peter King, Radio Officer, VK6KPK (staying for second year).

Roy Arnell, Geophysical Assistant, VK6KRA (ex-VK3KRA) Macquarie, and VK6KVR.

Ray Borland, Meteorologist, VK6KRB.

Bruce Cook, Geophysical, VK6KBC.

Davis—

Elliott Trigwell ("Trig"), Radio Supervisor,

VK6KAT.

Pete Turner, Radio Officer, VK6KPT.

The Macquarie contingent are already there and active but the Mawson and Davis bunch did not depart until mid January and do not expect to be at their stations until mid February. On the way down they are installing

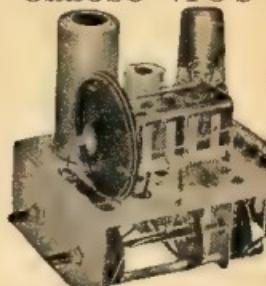
### SILENT KEY

It is with deep regret that we record the passing of:—

VK2MR—J. E. Stewart.

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an Automatic Weather Station, the location of which is expected to be on a small islet in Davis Bay on the Wilkes Coast about the same longitude as Adelaide. The gear for this station will be supplied by the U.S.A. and will operate simultaneously from lead acid batteries which are charged by wind driven generators. The transmissions are triggered off by a very accurate clock which puts the transmitter on the air every 15 minutes. The transmissions consist of a call sign "VNX" sent about 14 times, break sign, two letters for barometer, break sign, two letters for thermometer, break sign, one letter for wind speed, break sign, one letter for wind direction. Weather data is repeated three times before the transmission closes. The frequencies of the transmissions are 7315 Km. and 15845 Km. Each transmission has a power output of about 49 watts which is fed into dipole. The transmissions will be intercepted by Macquarie Island and Davis and then be forwarded to Australia. They are expected to be in operation by the end of January.

A new 1kW. transmitter is being taken to Macquarie to supplement the 1kW. already there. This is performing and transmitting equipment is also to be installed to assist in handling the increasing traffic load. To be erected will be a radio tower which is to be a vertical radiator for the m.t. homing beacon. An earth mat for this antenna has also to be laid.

Individual Ham activity at Mawson may have to be curtailed due to the large number of Hams in the year round party, so sharing the limited time seems to be the only solution. The main transmitters are in operation for approx. 15 hours daily, which is another factor likely to make inroads into Ham activity. It would appear that the next individual Ham activity will therefore come from Davis, where the commitments are less. Bill Stores VK3EGB, Lot 11, Prince Charles Street, Frenchs Forest, Sydney N.S.W., has offered to handle the cords for the whole Antarctic bunch this year. His offer, I understand, has been accepted. It certainly has the approbation of the Federal QSL Manager.

Bill, VK3EGB, now has the log of VK1GA Cocos Islands being held at W.A. and are expecting soon Bill with the log to work and clean up all outstanding VK1GA QSLs. You deserve to "make" the Honours List Bill.

Writer has 1956 and 1957 issues of "CQ" practically complete. These are going to be put up in a small show case first in with the postage, carriage or what have you gets them.

Received a visit from Bill Ryan, EIRBC, recently radio officer on "Australind" and signing EIRBC/MID from that vessel when off

duty. Bill has a yen for VK and ZL. Likes our climate, scenery, customs, way of life and may settle for ZL as a permanent abode later on. He hopes at conclusion of current voyage to get a few trips on one of the Star liners.

Ray Jones, VK3RJ, Manager.

## NEW SOUTH WALES

The monthly meeting of the New South Wales Division was held at Science House, Gloucester Street, on Friday, 28th December. As is the practice for our Xmas meeting, a film night was held. A very excellent programme was produced by Mr. Haywood, of the P.M.G.'s Department, who showed a number of films from their library, included in the programme was "The Overland Telegraph Line", "The Channel Country", "The Olympic Games" together with a comedy "Harry Harry". These films dealt with the technical as well as the general interest aspect of their subject and provided an excellent evening's entertainment for the members present.

Following the films, Mr. J. Reed, 2W1, gave a lecture on "Spunkin'". Discussion by means of chart and map, depicted the orbit of the satellite around the earth and many other interesting points relating to transmission of signals from "Spunkin".

Votes of thanks to Mr. Haywood and Mr. Reed were moved by Messrs. Godsell and Cummins.

During the business portion of the meeting, the Chairman reported that the 25 kva. emergency generator had been delivered to the Sydney for installation at 2W1 Dural and the log book showed that it had less than 150 hours running. There were also a number of the latest text books on display which had been presented to the Divisional Library. These will be held at 2W1 Dural until after the Hamfest when they will be available to members through the usual library service.

The meeting was closed at 10.15 p.m. to allow coffee to be served and members to have a final "spunkin".

**W.I.C.E.N.**—At the invitation of Bill 2H2Z a meeting was held at his home in Springwood on 8th December to discuss the formation of W.I.C.E.N. in the Blue Mountain areas. Those present were RAY PARK, E.A.A., E.V.F., Divisional W.I.C.E.N. Officer (SARG) and Divisional President (2APQ).

Following the disastrous fires, the necessity for emergency mobile and portable radio equipment has been made more evident.

Discussion on the type of equipment most suitable and frequencies to be used brought

forward many ideas and it was decided to use the 5 m.c. band for local point to point operation. Further work in organising this network will be continued in January. All Amateurs in the Blue Mountains area are invited to contact Bill 2H2Z.

During the latter part of December members of the Griffith Radio Club were called upon to provide communication links during the bush fires in that section of the State. Members with mobile equipment operated right up to the fire front and greatly assisted the authorities in maintaining communications between parties building fire breaks and with neighbouring districts.

Further progress has been made during December with the v.h.f. links to 2WI at Dural. A 3 m.c. link from Gosford to Palm Beach and relayed on to 2WI. Dural was very successful and allowed the members of the Central Coast section of the Division to participate in the Sunday morning broadcast.

The v.h.f. news has also been given over a 3 m.c. link from 2PM's QTH at Castlecrag. A relay link from 2WI, covering a distance of 40 miles from 2WI at Dural, gave some indication of the possibilities such links have in times of emergency.

Preparations are in hand for the Urunga Convention to be held on the Easter weekend. For those who have not consulted the calendar this is the first week-end in April. Arrangements for the Convention are being handled by Noel SAHKE.

Members are reminded that their annual subscriptions are due on 1st March. Payment by cheque or money order will greatly assist the Treasurer.

## VICTORIA

Well, another Christmas has come and gone and is nearly as far away again as ever.

Now that the New Year is well on its way, it is hoped that the usual resolutions have now been made and that they really bear fruit in their fulfilment. While personal resolutions are much easier made than done, there is not much achieved without them, so let's pull up the socks, grit the teeth and set cracking. Even a resolve to keep the shack tidy this year is something. Anyway, I hope to do better next year.

No doubt most of you were listening to the Sunday morning broadcast on 22nd December and heard our President, Fred JYS, give his Christmas broadcast to the Division. It is not surprising that he did this, as he had sent seasonal greetings to all cities and country members and thanked all who have served the Division in any way whatsoever throughout the year. He especially thanked Jay Lancaster, our Vice-President, for his services and our Federal Councilor, who have given a sterling service in 1957. Special thanks were also given to the South Western Zone for their very successful role as hosts to the State Convention, which was held at Colac on this occasion.

Thanks are also due to our worthy President for his guiding influence as the success of the last year's activities of the Division has been due in no small measure to his efforts. Our Institute doesn't run itself but

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must be nurished along by such as Fred, and we are grateful for the time and energy he has expended on our behalf, for believe you me, it has been quite considerable. Through the efforts of our President and his colleagues the Division has had a very strong position today and this is some recompense no doubt for the work that has been done in the past. However, much has still to be achieved and the greatest reward we can give any of our officers is their active participation in all the activities either business or social, which they arrange for our benefit. This is very important, for unity is strength and we cannot afford to become lethargic with so much still to do. Your editor's thought will prove the truth of this statement and every year the going gets tougher, so lend your support.

In addition to the serious side which we must remember there are other interests to suit the taste of all such as lectures at our monthly meetings, conventions, contests, tv hunts, field days, visits to places of interest and listening group activities to mention just a few. So choose your hobby and devote to it an active part this year in your particular field of interest. Don't wait for someone to take your hand and ask you to come along. Name Ham Radio doesn't function that way. This is our hobby and we, the members, are the Institute which safeguards it as such. If we don't look after our interests then it won't be long before the bands which were once the backbone of today are picked from us. Active use of the bands and a strong Institute are the only means we have of justifying our use of the bands so don't leave it to the other fellow to look after our interests. Take care.

The Magazine is another avenue for participation in Institute activities, so when you have something of general interest to communicate in the way of technical articles or otherwise, write up a paper and get it in. Your various service and technical people can't ferret out all the doings and news on their own and assistance in this way is always appreciated and very necessary.

This year I have decided to have a "Discussion Night" in place of the usual lecture at the first meeting for the year on Wednesday, 5th February, so bring along the subjects most dear to your heart and give them an airing. Please note that the Convention will be closed from 8th January to the 14th February inclusive, while Mrs. May takes her annual holidays.

#### EASTERN ZONE

Hoping everybody enjoyed the Christmas break, and had an enjoyable day at the National Field Day which was held over the long week-end, 26th January. Don't forget to come along to the Eastern Zone Convention to be held in March at Sale.

Most activity in the zone is on two metres. Some good openings, when Ian 3AAV and George 3ZCG worked 3ZAG and 5CH in Mount Gambier, and Peter 3ZDP worked Eric 3ANQ in Warrnambool. Steve 3ZDN at Pakenham East (who is a 24-hour man) and Ron 3ZD worked a station in Launceston.

No news has been forthcoming from the rest of the zone, so no local chaps have low frequency gear in operation at the moment. There also seems to be an increasing interest in six米 throughout the zone.

#### MIDDLE EASTERN ZONE

The North Eastern Zone Convention, held at Nellinga on 15th December, was quite a success with sixteen members and possible members being accounted for in 3ZU, 3AXW, 3AJLE, 3PF, 3AGC, 3AHQ, 3ZAK, 3AGO, 3FD, 3WD and 3KZ as well as Associates and B.I.s. Jim van Kirkwick, Jim Harrington, Howard McDonald, David Lawrence and Russell Ross.

We will try holding the zone book-ups on alternate Sundays and Mondays on 80 mhz, the frequency being about 1000 Kc. The 720 page alternate second Monday evenings and the alternate Sunday mornings at 11 a.m. on a spot about 1100 Kc. The first station on the air is to pick a clear spot and call on 40 mhz. It is my opinion that Alan 3UI and Keith 3JC is working hard on the Nathalia R.F.B. radio network. Ian 3TE is on deck. It will be remembered that George 3GD was first to hear the Russian Sputnik II when it was launched. Jim 3CO is back again, as is Alan 3UI and Johnny 3ACK does not have much space now at this time of the year. Alan 3UI is well on the way to recovery now and Keith 3JC is tied up by his business ventures. Former radio manager of the zone, John 3AB, the tactful referee party in the Danish ice-breaker Thala Dan early in January for the I.G.Y. operations at Mawson.

Howard 3JV is busy in fields of interest other than Amateur Radio, while Henry 3HF

is often heard on his R.F.B. radio network and Hugh 3A9H is about also. An interesting note appeared in the mail from Associate Bert Brown in Yea. It has been learned with some regret that Jim 3JK has been rather seriously injured in a car accident. The next Convention included 3IP, 3AUH, 3GD, 3ASF, 3CO and 3CL, all of whom we hope to see at our next Convention, to be held we expect at Benalla on the first Sunday in April, or so we expect at the moment.

#### SOUTH WESTERN ZONE

The zone members have been very active of late and let's hope that it continues. I think quite a lot of inactivity is caused by the green-sickness. Bill 3EJ is off quite regularly, also John 3AB is very consistent with the Thursday night hook-up. Also Thorb 3APB, Neil 3HG and from Geelong Bob 3JC, but there are still a lot more who could be on. Next SATURDAY 2nd March will change date, forget to book before the 15th February if you intend coming to the Convention which is to be held in Warrnambool on the weekend 22nd and 23rd March. There is \$1 admission for the Saturday and bookings of 1/- for the dinner, so don't hesitate to book as the above date cannot be altered.

Anyone who intends bringing a caravan must let the organiser, W. J. Wines, 48 Cemetery St, Warrnambool, know as soon as possible to help us help you. Whilst reasons of Convention, the weather may be bad, we will be hidden by humps and we will be on the air to work mobiles coming to the Convention from 13 midday on 22nd on both 7 and 3.5 Mc. You may catch up with them as they will be called for so many calls and bring the family and make a holiday week-end of it. Please note, any ladies who want to go to the pictures on the Saturday night must let the organiser know. On 14th March do not forget. Watch for the full programme in the March issue.

#### WESTERN ZONE

We welcome new members to the Hams ranks in this zone. They are Reg Dalby, of Horsham who is an ex-Transmitter, but now we are pleased to say is a government employee of Horsham, and Vic Maddern, of Merton who has been busy during the last couple of years doing a correspondence course. Vic passed his 1000 Kc test and I am sure that these chaps are now waiting on their call signs. George Small, of Rainbow, has also recently obtained his Limited. George is working on a SCR321 converting it to the 144 Mc. band and is working on his own 3 beam. He will be carrying out tests with Jim 3AOE of Hopetoun and Max 3CW of Ouyen in the near future.

#### QUEENSLAND

Amateur Radio activities have, for the past month or so, really ground to a stop! There has been a long silence from all quarters, as the boys went elsewhere to a semi-called break over the Xmas holidays. From what I heard they probably needed it after a really "smashing" Xmas party at Anzac House! Still we'll give them the benefit of the doubt and expect a rejuvenated gang, with plenty of drive and loads of ideas, at all our 1958 meetings.

All activities other than the Xmas party have been reported, with the result that there was no enough news to warrant the publication of a column in the January issue of "A.R.". However, although the January Tx Hunt was cancelled, Jim 4PR, our Secretary, reports that there are several matters to be dealt with by Council at its next meeting. So doubtless boys, you won't have to put up with re-hashed news items.

One of our important functions, the Xmas party, was held at Anzac House and perhaps one of the biggest roll-ups we have had for many a long day. A 4AW crew again, very ably organised the show and is to be congratulated on the fine job he did. The boys, having had all year to look forward to the party, certainly did justice to the well prepared supper. As usual there was more than enough (although I bet the money) won't agree with me that all things good to eat and drink.

Members from Dalby, Marborough, Gympie, etc, were keen. It certainly was a great day for the country boys to come, but as one member put it, "It's good to see all the Hams enjoying themselves—just like one big happy family." In all, 42 members and friends turned up, which is a record for the usual absenteeism associated with Xmas holidays, a fine effort on the part of all those who attended—with a special mention for the country boys. Anybody who is willing to travel the long distances that separate town

and country can be assured of a really good time at all the W.L.A. functions because the boys on the spot do realise and appreciate the personal sacrifices that have to be made. However, all said and done, a really excellent evening.

The only bit of news, regarding disposals, concerns less surplus bugs. These will go to ballot in the usual manner. I was informed, that two of the keys are left-handed. One particular bug (shaped like a left-handed creature) proved that a special ballot for these two bugs be conducted among left-handed Hams. There must be a catch somewhere.

Brian Bond is still enjoying "well-earned" holidays at Tewantin, with frequent daily visits to the "Royal Mail". Enjoy yourself, Frank. It's later than you think.

Mr. Lloyd McGarry, who for some considerable time has been Radiotelegrapher in Brisbane, was recently transferred to Townsville as District Radio Inspector. I'm sure the boys up there will find in him a man who, although he knows the regulations backwards, applies them with common sense and understanding.

As usual the general meetings will be held on the fourth Friday evening of each month. Huddon's house will begin with Merv 4ZL's hideout on the first Friday in January 1958 on the first Friday evening in February at 8 p.m. Hunt will start from 85 Liverpool Road, Clayfield.

#### TOWNSVILLE

Since penning the last article, I have covered quite a few miles by automobile during my holidays. As promised, I paid a visit to Rockhampton and met the following: Hal 4DO, who kept his eyes closely on me as I prowled around his beautiful cubicle and which looked very nice. Also, the simple supporting structure. Bob 4NG was next on the list and he introduced me to Lance 4ZAL, of Mt. Morgan, the only signal on the band, via Mt. Morgan's book-up. Bob is now getting deep into the art of mobile construction. Jim 4EC failed to answer the telephone and missed out. Tom 4ZL was next on the list and proved to be the most accommodating chaps of the lot as I walked away with a Kingbird 4000 and a Mc. counter. Was unable to see any of the other boys as my visit was really to look up the old mining town of Mt. Chalmers of my childhood days. On the return journey a visit was paid to Harry 4EC, who asked me to call again as he took me to see John 4FH and his 3 el. beam. Then on to Home Hill where Norm 4ND was looked up at his place of business and I made myself known in person in lieu of voice in the "Mc. Bookshop". Arrived in Townsville just in time to be present at the send off to Alec Munro, our local Radio Inspector, to Hobart.

Quite a nice gathering of the local radio chaps met at the Hotel Tivoli and the evening went off very nicely. Farewell speeches were made to Alec by all members present and we wished him God Speed and Good Luck in VK1 YKD.

He promised to be on the air occasionally. The President, 4RW, was there. Also Alan 4UK, a pipe as a token of the esteem in which he is held by all in the north. Alec suitably responded and—regretted his departure, but promised to only come by transistors. According to the weather report it would be going from the frying pan into the frigidaire. He then asked all the boys to give the same co-operation he had from them to the new Radio Club. Mr. McLarry, who arrived on Friday and was also present, was warmly welcomed by the President and others in short speeches. He then suitably responded, mentioning he was glad to see the esteem in which Alec was held by all and would follow in his path. He would at all times be available to give his co-operation and advice when needed.

The following week found me on the highways again. This time travelling north. First port of call was Innisfail where Bob 4TK had a flat made up for me with a good meal waiting on my route and stations to visit. This was duly done. Thence by the Palmerston, to Tully, to Ravenshoe and the Tully Falls. Camp was made at Atherton where Bert 4BP did the honours and got me into hot water with the C.Y.C. for staying out late.

Next was a visit to Malanda to see Claude 4UX and his string antenna, where I heard the best of the year. Claude claims he has visited every country and state in C.S.A. On to Tinaroo to see the new dam. Unfortunately I did not see Miss Australia (Helen Wood). Next on the list was Mareeba to see Andy 4BW, where we stayed the night and made a good chit-chat on the radio. Missed Alice 3HA from Mount Garnett who pulled in one hour after I left for Cairns.

After travelling up as far as Daintree the car was headed back home with a stay in Cairns for the week-end where once again

I missed Alec 4MA at Basil 4ZW's place. Will meet you yet, Alec. Third time lucky, I hope. Pieces of gear was paid to Ken 4XD and a few pieces of gear swiped. Next on the list was Bill 4ZW, who has been doing a bit of disposal gear. He promised to itemise some and forward a list, with small prices, for the gang.

Home again for Xmas and a good roll up on the radio front. The season's good whether Next events take place here, back down South or Mackay where Harry 4ZP from Saras promises to come see me. Such is fate!

While we are away Bob 4MF has put up a new G4ZU beam and it seems to be working well. Bill 4ZW has recently started sending his Z call sign. Two or three chaps face the barrier on 14th Jan. and we wish you all success. If you miss out remember Robt. Bruce and the spider. Try again.

#### MARYBOROUGH

4DJ came back from a visit to Sydney with so much gear that the car couldn't hold it and had to have the rest of it railed. Graham had his 15 and 16 metre quads tuned up now and is looking forward to the Field Day. 4GZU is making a new final with an 813 and a mobile rig for the Field Day. 4CB still active on 10 and getting through to Europe most nights. Congratulations to a three-band beam.

4PZ has been on 16 with a borrowed receiver and now has a 3-tube converter. Ron is pleased with the results from his 4 el tri-band beam, comparing well with separate beams at other stations. The new 15 metre converter at 4AI is working well, and Alan should be on soon.

#### SOUTH AUSTRALIA

Our Christmas meeting got away to a really good start with friendly banter being continued in record time, which included confirmation of three new full members: W. F. Cooper, K. G. Yates and R. L. Dyer, and 14 new associates. Welcome to the Division to you all. We hope you will enjoy being a member and derive benefits therefrom.

One of the benefits was, or could have been the "Christmas Do". The opening items being coloured pictures by Gordon 3XU and Brian 3CA of their members. This was followed by a short talk by Gordon gave us the programme and all (most anyway) of the technical details involved, whilst Brian in his usual style made good commentary on the slides as shown. The first 100 members really enjoyed the travel experience as told and displayed and were sorry to see it end.

End. It had to do, of course, because by that time Cheo 3MD and his merry band, not forgetting others like Peter 3PZ, were hot bunting and the ante-room was bursting with cakes, buns, biscuits, pasties, pies, sausage rolls and sandwiches, so something had to be done about it.

W.L.C.E.N. distribution was made whilst this sumptuous repast was laid on a long table (about two wavelengths long) right down the hall. Oh yes, a snow white table cloth of equal length (plus some end effect) covered said table. And there he sat, here he sat and there SAX cleared his gong amongst a lot of gakas and drew a circuit diagram of his preselector on said cloth. Just shows the habit of a life-time will cut.

With regard to healthy appetites there was a large quantity of items left over which as usual was distributed to charity, so if any of you brought too much along you have the satisfaction of knowing some needy person shared the surplus.

It was fairly late before the party broke up, for the v.h.f. boys had to have their meeting karbide as usual and were not a bit dismayed by a late start.

The good-natured nature was appreciated by all and all voted it another good show.

February 25 will see the end of financial year at which time existing officers and Council will be up for re-election or not according to the members' desire. If you have someone who you would like to see on Council now is the time to speak up, get that nomination in right away for new blood and new ideas are the life-blood of our show, so don't be backward. Any intending member of Council will find it an interesting experience and well worth the trouble.

Last Council meeting we had the pleasure of a visit from Geof 3GC who by virtue of the work done on Committees was given quite a few pointers on emergency communication work, for which we were grateful. Thanks George.

The resignation of Ian 3IG from the T.v.i. Committee was accepted with regret, for he had done a power of work on that Committee, anyway it was seen Ian could not carry on under the circumstances, but has made himself available for consultation whenever needed.

So VK5 did it again, congrats chaps, we ran second! Look out next year, for it would be nice to see the R.D. Trophy again.

There was to be a first in things; this time it was Reg 3HR who came in the air on 40 m with d.s.b. not a bad effort at that either, and if nothing else demonstrated that he put in a louder signal at my QTH on d.s.b. that a.m. Have not heard him since that first appearance. So what's the news and we hope to hear more of him and others who may try the same ideas.

I know you would not expect Gordon 3XU to run that extra, but the 3XU band was recently on the broadcast to claim the trophy and see-sawing like a swing, it handles, please).

Keith 3KH heard recently inviting all and sundry to visit him and share some 30 watt audio. Well look out Keith the poor Chrisman weather bureau sources say Nobby 3WK now using 40 m so look out for him, forewarning 19 Nobby?—been a bit quiet lately anyway. Les 3AX now has his 4GZU remote controlled and selenyn indicated, also no 100 m height limit as a result of this. Can't last heard of at the 25 ft. level of his new tower.

Jot SJO complained he has a welder operating next door. In fact so close that a 240V. power line from the welder to the house was fused. Each time an arc is struck, and that he can hear the s.c.u. hum of the welder transformer in his shack. Gordon 3XU has a somewhat similar bother, but a little further from him, stated to be within brick rendering distance, but not enough to measure.

The death was reported in Adelaide on 31st December of Clem E. Amos, who was the first Secretary of the W.L.A. and naturally was responsible for a large degree in getting the Institute on its feet in the early days. So another pioneer passes to his reward.

We were all saddened by the news of the tragedy met out to Pete 37M, so much has been said on this that there is no need to go into it. However, H. M. R. A. has this swift treated the matter in the broadcast in an outstanding way and expressed all our sympathies at that time.

W.L.C.E.N. has continued to take shape and form, and for emergency Jim 3JK is of course the Chairman of the Executive Committee with John SJC and Brian 3CA joint co-ordinators. The standby roster for each week's duty will be given over in SWL each Sunday and also published in the SWL each week. See you on Friday day. Members please watch for this and notify the co-ordinators promptly if your affairs prevent you fulfilling the duty allotted to you. 3000 and 3001 are the calling frequencies with 3002 for Federal committee.

More members are required for W.L.C.E.N. both full and associate, so join up now to aid the work being done and further your experience in operating technique. Certain equipment is available to help you join in if you are not still a busy boy, playing bowls, making 50 cycles and beheading chooks. Dave 3SKH heard occasionally on 49 mhz, but not over much these days. John 3MG back from camp and on the air again, but still can't seem to get into the swing of things like most of us change our mind— but always pops up with a really first-class signal. Laurie 3XKN recently complained of sparrow on 3 beams, burning resistors, foot switches, trigger modules etc., etc. What always happens when he wants to go on the air. Anyway, he was heard recently trying out a new pre-amp with clipped sounded fine here, particularly on the second attempt.

Burnie and Ross 3YR continue to keep in touch each Sunday. Bob 3RM is also a good boy for the QSO on 40 m these days. Austin 3SW still bowling them over on the DX, although gathered this mainly from those replying to him. Ken 3SKC bobs up at the most widely scattered places whilst trying out his mobile gear. Frank 3MZ last heard of over 21.4 m tx.

#### TASMANIA

##### NORTH WESTERN ZONE

Well, I've been caught at last. No, no, not the R.I.I. I happened to be listening to 4Q one evening when I heard Myles 3MF and Dennis 3DR in contact, so decided to risk the rebuffs and break in, called myself several times, no reply. Discovered later the tx was on 30 m and the rx was off. Printed 3SKC Sid 3SE in Melbourne recently, did the rounds on the radio dealers, but couldn't buy very much as he was unable to obtain the \$15 from New Treasures for zone purchases. Better luck next time Sid.

This time of the year seems to be popular for recreational leave, Dennis 3DR has been holidaying at Anson's Bay. Didn't hear that portable rig Dennis. Jim 3JO, who has changed his QTH from Latrobe to Devonport,

also enjoying leave. Ted 3EJ had a visitor recently from VK2, Charlie 2ASA, also on leave. Understand Charlie cleaned up the operating position at 3EJ, unfortunately till after Ted had had a visit from the R.I.I. Ted says he won't be able to find anything now. Secretary Max is still busy studying, and I believe is building a coil winding transformer. 3L1 and 3L2 and intends to wind all the power transistors for the big Trust you will be in for the next exam Max.

We have now acquired a second member at Stanley—Reg 3RN has returned to the field. That was a neat little portable rig Reg. Let's hear you some time. Same for Pat 3PM. Getting word of the associated in the zone over the Christmas-New Year period but trust that they have now got back into stride and are all studying hard. A little and often is the shot.

#### HAMADS

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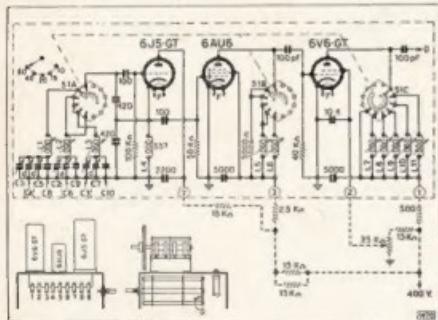


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